DHRUV KUMAR

CONTACT INFORMATION

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RESEARCH INTERESTS

High Performance Computing, Data Mining, Machine Learning, Natural Language Processing.

EDUCATION

Birla Institute of Technology and Science (BITS), Pilani, India **Aug 2010 - May 2014**
Bachelor of Engineering (Hons.) Computer Science

- CGPA: **9.92 / 10.0**
- **Rank 1** in Class of 2014 of Computer Science, comprising of 120 students.
- **Rank 3** in Class of 2014 of BITS-Pilani, comprising of 800 students.
- **Relevant Courses**: Discrete Structures, Microprocessor Programming and Interface, Data Structures and Algorithms, Theory of Computation, Digital Electronics, Computer Organization, Operating Systems, Database Systems, Computer Networks, Programming Languages, Compiler Construction, Computer Graphics, Advanced Data Mining, Machine Learning.

RESEARCH EXPERIENCE

ADAPT Lab, BITS-Pilani **Apr, 2013 - Oct, 2014**
Project: *A New Distributed Computing Framework for Data Mining*
Mentors: *Navneet Goyal, Poonam Goyal, Sundar Balasubramaniam*

- Designed and implemented data mining algorithms such as OPTICS, SLINK, DBSCAN for shared memory and distributed memory models.
- Used data distribution and task parallelism techniques for exploiting multicore and multinode architectures. Implemented using OpenMP and OpenMPI libraries in C.
- The work resulted in a number of publications. (See below)

PUBLICATIONS

Poonam Goyal, Jagat Sesh Challa, **Dhruv Kumar**, Navneet Goyal, Sundar Balasubramaniam. *Grid-R-tree: A data structure for efficient neighborhood and nearest neighbor queries in data mining*, submitted for review in Journal of Data & Knowledge Engineering, Elsevier.[Link]

Dhruv Kumar, Poonam Goyal, Navneet Goyal. *An Efficient method for Batch Updates in OPTICS Cluster Ordering*, to appear in International Journal of Data Analysis Techniques and Strategies.[Link]

Poonam Goyal, Sonal Kumari, Ankit Sood, **Dhruv Kumar**, Sundar Balasubramaniam, and Navneet Goyal. *Exact, Fast and Scalable Parallel DBSCAN for Commodity Platforms*, in International Conference on Distributed Computing and Networking (ICDCN), 2017.[Link]

Poonam Goyal, Sonal Kumari, Sumit Sharma, **Dhruv Kumar**, Vivek Kishore, Sundar Balasubramaniam, and Navneet Goyal. *A fast, Scalable SLINK Algorithm for Commodity Cluster Computing Exploiting Spatial Locality*, in IEEE International Conference on High Performance Computing and Communications (HPCC), 2016.[Link]

Poonam Goyal, Sonal Kumari, **Dhruv Kumar**, Sundar Balasubramaniam, Navneet Goyal, Saiyedul Islam, and Jagat Sesh Challa. *Parallelizing OPTICS for Commodity Clusters* in International Conference on Distributed Computing and Networking (ICDCN), 2015.[Link]

Poonam Goyal, Sonal Kumari, **Dhruv Kumar**, Sundar Balasubramaniam, and Navneet Goyal. *Parallelizing OPTICS for multicore systems* in ACM India Computing Conference (ACM COMPUTE), 2014.[Link]

Professional Experience

primarykey.io and corporatecabs.io **Apr, 2016 - Current**
Technology and Strategy

- Designed and implemented the entire back-end for **primarykey.io** and **corporatecabs.io** from scratch.
- The entire back-end functionality was exposed using RESTful APIs implemented using Django web framework and hosted using Amazon web services.
- Gained valuable experience in building scalable and secure back-ends for web and mobile applications.

Goldman Sachs, Bengaluru, India **Nov, 2014 - Apr, 2016**
Software Developer, Investment Management Division

- Improved the efficiency of risk-management system by suggesting improvements to the SQL queries going to Sybase IQ database.
- Assisted in migrating from Sybase IQ database to MemSQL database for faster access.
- Wrote APIs for accessing MemSQL database.
- Implemented a H2-database based server for allowing real-time updates to the tables residing in the servers.
- Learnt about the real life use-cases of databases.

CSIR-CEERI, Pilani, India **May, 2012 - July, 2012**
Summer Intern

- Studied, compared and implemented various unsupervised machine learning algorithms.
- Learnt about the use of these algorithms in real world applications

Selected Academic Projects

Restaurant Recommender System **Oct, 2013 - Nov, 2013**

- An application which can recommend suitable restaurants based on user inputs of location, type of cuisine, type of meal, etc.
- Restaurant reviews taken from yelp.com and processed using NLP techniques.

Complier Construction for a Toy Language **Jan, 2013 - Apr, 2013**

- Designed lexical, syntax, semantic, code generation phases of compiler in C.
- Efficient use of Hash Tables for constructing symbol tables.
- Designed Abstract syntax tree rules for semantic analysis.

Transcripts Website for BITS, Pilani **Feb, 2012 - Aug, 2013**

- Used by BITS students and alumni for the application of Duplicate Transcripts and Grade Sheets.
- Built using ASP.NET, C#.NET, Microsoft Visual Studio, MS SQL Server.

Technical Skills

- **Programming:** C, Java, Python, OpenMPI, OpenMP, MySQL, Verilog, Matlab
- **Mobile and Web Technologies:** HTML, CSS, JavaScript, AngularJS, Django, Android
- **Cloud platforms:** Amazon web services

Honors and Awards

- Awarded merit scholarship of total worth Rs 4,75,000 for being in top 10 students among 800 students of BITS, Pilani by the institute. [**Aug, 2010 - May, 2014**]
- Awarded research incentive fellowship of Rs 25,000 in recognition of the contribution in the undergraduate thesis project. [**May, 2014**]
- Nominated twice for O P Jindal Engineering & Management Scholarship. [**2011, 2012**]
- Selected for attending 4th South Asia Workshop on Research Frontiers in Computer Science at NUS School of Computing, Singapore. [**May 2014**]